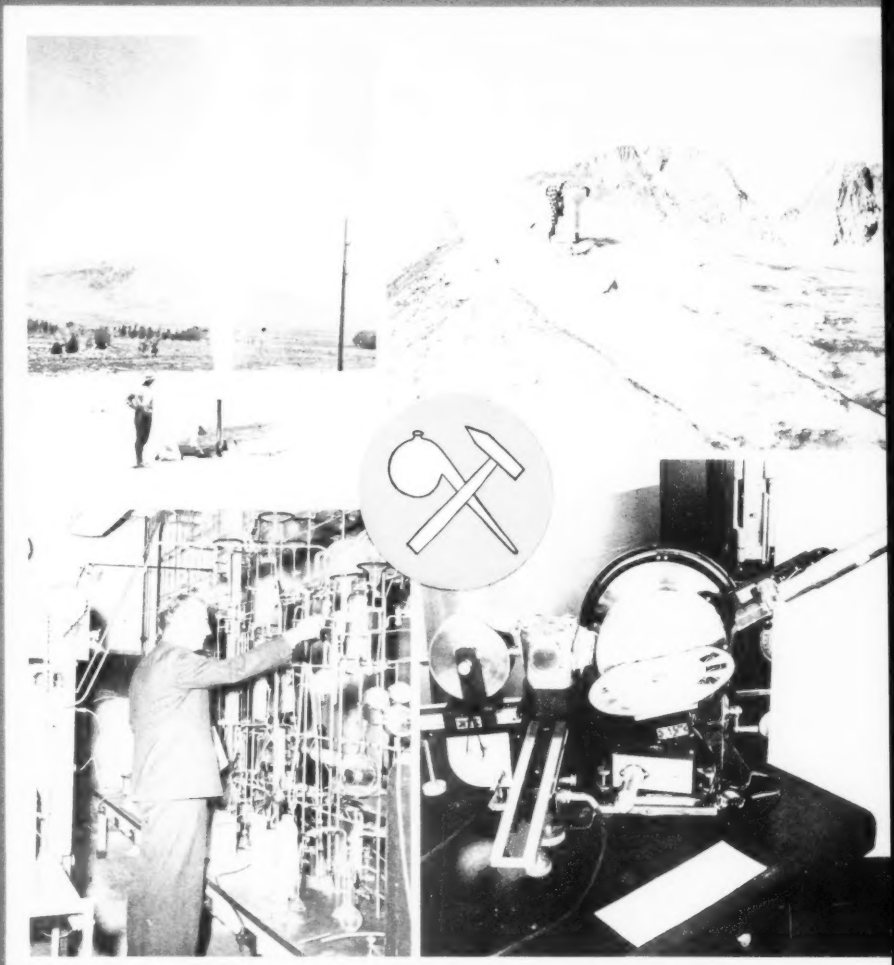
GeoTimes

Successor to the Geological Newsletter



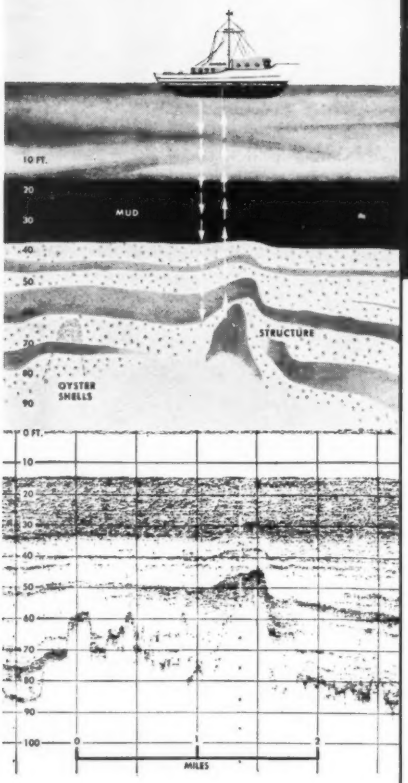
COORDINATION – COOPERATION · GAI · SERVICE

February 1957

Volume 1, No. 8

Published Monthly by the
American Geological Institute

ANNOUNCING... A MAJOR NEW GEOPHYSICAL ADVANCE



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Calendar

Cooperation of Society Secretaries in supplying meeting notices for GEOTIMES calender is requested.

Feb. 15, 1957—8th ANNUAL GEOLOGY SYMPOSIUM, conducted by Penn State U. & Penn Dept. of Highways, on campus at University Park, Pa.

Feb. 24-28, 1957—A.I.M.E., Annual Meeting, Hotels Roosevelt and Jung, New Orleans, La.

February 25-27, 1957—AAPG, Rocky Mt. Sect., 7th Annual Meeting, Salt Lake City, Utah.

Mar. 3-9, 1957—ASP - ACSM Consec. mtgs., and co-exhibit, Shoreham Hotel, Washington, D.C.

Mar. 4-8, 1957—PITTSBURGH CONF. ON ANALYTICAL Chemistry and Applied Spectroscopy, Pittsburgh, Pa.

Mar. 10-16, 1957—SECOND NUCLEAR ENGINEERING & SCIENCE CONGRESS, sponsored by EJC, AGI participating. Convention Hall, Phila., Pa.

Mar. 19-21, 1957—AMER. METEOROLOGICAL SOC., 151st Nat. Mtg., Univ. of Chicago, Chicago, Ill.

April 1, 1957—AGT, Cent. Sec., 9:00 AM, Kiel Audit. Conv. Hall. Comm. room C, St. Louis, Mo.

April 1-4, 1957—A.A.P.G., National Convention, Kiel Auditorium, St. Louis, Mo.

April 5, 6, 1957—PACIFIC SOUTHWEST MINERAL INDUSTRY CONF., sponsored by Nevada, San Francisco & So. Cal. Secs. of A.I.M.E., Reno, Nev.

April 19-20, 1957—G.S.A., Cordilleran Sec., ann. mtg.; P.C. Br. of P.S. & the S.S.A. also meet at UCLA, Los Angeles, Calif.

April 29-May 1, 1957—AMERICAN GEOPHYSICAL UNION, 38th Annual Meeting, Washington, D. C.

May 5-9, 1957—AMERICAN CERAMIC SOCIETY. 59th Ann. Mtg., Statler Hilton Hotel, Dallas, Tex.

May 7, 1957 — INTERNATIONAL HYDROGRAPHIC CONF., Seventh Congress, Monte Carlo, Monaco.

May 10-11, 1957—G.S.A., ROCKY MTN. SECT., 10th Annual Meeting, Logan, Utah. For information write to Sec'y. of the Sect., Gordon S. Wise, P.O. Box 58, Salt Lake City.

May 16-18, 1957 — G.S.A., SOUTHEASTERN SECTION, Morgantown, W. Va.

1957-58 — INTERNATIONAL GEOPHYSICAL YR.

July 10-19 — INTERNATIONAL UNION OF CRYSTALLOGRAPHY, 4th General Assembly & International Congress. McGill Univ., Montreal, Quebec.

August. 1957—INTERNAT. ASSOC. OF SEISMOLOGY & Physics of the Earth's Interior, Toronto, Ont.

August. 1957—INTERNATIONAL ASSOC. OF PHYSICAL OCEANOGRAPHY, General Assembly, Canada.

Sept. 9-10, 1957—AMER. CERAMIC SOC., Basic Science Div., State U. of N.Y. Coll. of Ceramics, Alfred Univ., Alfred, N.Y.

Sept. 20-27, 1957 — FIFTH CONGRESS OF INQUA, Madrid, Spain. For information write: L. Sole Sabaris, Instituto Geologico, Universidad Barcelona, Spain.

Oct. 14-18, 1957—Internat. Industrial Development Conference, sponsored by Time-Life International & SRI, Fairmont Hotel, San Francisco, Calif. Attendance by personal invitation.

1960—XXIst INTERNATIONAL GEOLOGICAL CONGRESS, Copenhagen, Denmark. Field excursions to Scandinavian countries.

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By Raymond C. Moore, University of Kansas. 542 pages, $6.75

In this text a universally recognized authority presents an exceptionally readable, well-organized account of the important features of earth history, including evolution of plants and animals by fossils. Avoiding technical terminology, the author makes clearly understandable how observed geologic features furnish a record of past conditions and events. Emphasis throughout is on deductive reasoning; explanations of cause-to-effect relationships are substituted for dogmatic statements. Illustrations are numerous and well selected.

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By W. Maurice Ewing, Columbia University; Frank Press, California Institute of Technology; and W. S. Jardetzky, Columbia University. McGraw-Hill Series in Geological Sciences. In Press.

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PHYSICS AND CHEMISTRY OF THE EARTH

Progress in Physics and Chemistry of the Earth, Volume I

Edited by L. H. Ahrens, Oxford University; Kalervo Rankama, University of Helsinki; and S. H. Runcorn, King's College. 326 pages, $8.00

Provides authoritative and up-to-date surveys of progress, results, and methods for those actively engaged in geophysics and geochemistry. Volume I consists of chapters on important specific topics written by internationally known scientists. It contains a review of progress on the geochemistry of the halogen group of elements and a review of some aspects of Russian geochemistry and geophysics during the last five years.

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Successor to the Geological Newsletter

Published by **THE AMERICAN GEOLOGICAL INSTITUTE**

Robert C. Stephenson, EDITOR

Kathryn Lohman CIRCULATION MANAGER

Vol. 1, No. 8 February 1957

Page

Professional Ethics and Conduct for Economic Geologists
by D. M. Davidson 6

E. L. DeGolyer 8

Geochemical Society, becomes 14th AGI Member Society 9

"George" Needs Your Help 10

Geology Teachers Institute at Illinois 12

October 1957, Geology for BSA 13

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..... As Others See Us

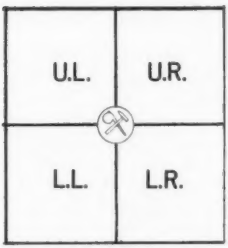
Since the geological profession has a place in society, we cannot operate oblivious of society nor of public opinion. It is important to us that we are understood and that our profession is recognized. Not only is it important to us, but it is important to our national welfare, for ours are duties of great responsibility in the future of the nation. Within the past few months geoscientists have figured in the news both honorably and not so honorably.

With the recent passing of a leading geologist, the press across the nation told not only of his many professional accomplishments, but cited his cultural interests which benefited his fellow man. We could be proud to say he was one of us.

Most of us read of the professor of a mid-western university who defected to Russia. This man was a specialist in one of the fringe areas of the earth sciences. A little research turned up the fact that this man was poorly adjusted to the scientific community and his scientific abilities were not distinguished.

Interspersed with stories of peace on earth, good will to men at the Christmastide, our newspapers carried, in type too large and bold for our professional comfort, details of the piracy of valuable exploration data in which two geologists were named as key conspirators. We of the geological profession can perhaps find some solace in the fact that neither of these men were members of any of our scientific societies, nor were they in the National Register as geologists. True, such instances are not of frequent occurrence; for this we should be grateful because of the unfavorable publicity our profession receives.

If we, as a profession, wish to be viewed with favor and respect by society, we must first contribute something to the welfare of that society. Public education, career guidance, scouting and other public spirited endeavors are activities into which each one of us can channel energies and, by so doing, contribute directly to the stature of our profession. Finally, we must foster and maintain within the profession an awareness of scientific and moral integrity—we should learn—"to see ourselves—"



OUR COVER

Saluting the Geochemical Society: *U.L.*—Sampling at Steamboat Springs, Nev.; *U.R.*—Collecting samples for hydrogen-deuterium analysis on Grasshopper, Glacier, Mont.; *L.R.*—X-ray Spectrograph with automatic multiple holder; *L.L.*—Carbon-14 apparatus.

The AMERICAN GEOLOGICAL INSTITUTE is a non-profit professional service organization established and managed by the scientific societies in the fields of geology and geophysics in cooperation with the National Academy of Sciences-National Research Council. It is the instrument of the profession serving and advancing the welfare of the geoscientist in matters relating to education, professional responsibilities and government relations. It is an active member of the Scientific Manpower Commission. It also functions in the stimulation of public education and awareness of the earth sciences, through career literature, the scouting program and other channels of communication.

GEOTIMES is the news magazine of the geological sciences. It reports on current events in the earth sciences, public education and public relations efforts throughout the profession, as well as appropriate legislative and governmental issues. It announces scholarships, fellowships, publications and new developments. It provides a forum for discussion of timely professional problems, and affords a common bond between the many specialized groups within the earth sciences.

Professional Ethics and Conduct for Economic Geologists

by
D. M. DAVIDSON[1]

The vastly expanded search for minerals, with a resultant increase in the ranks of economic geologists since World War II, coupled with the mushroom growth of uranium prospecting and development which involved the formation of scores of uranium companies and the offering of innumerable shares for public consumption, has combined to pose problems of ethical conduct on a scale not heretofore encountered in the realm of economic geology.

In our profession, such ethical standards of conduct, as they pertain to economic geology, may logically be grouped according to intra-professional, employer and public relationships.

Inter-professionally, the complicated nature of today's ore-finding techniques requires, above all, teamwork, which in turn demands that professional geologists subordinate to an extent their personal interests for the welfare of the group. In the budding era of mining geology, it was often customary for an erudite pundit (necessarily of strong personality) to expound his views on the worth of a property with vigor and with such assurance that these views were taken as gospel. In those days there were many Chiefs, but few Indians; it now behooves us to have many Indians but few Chiefs. Today, prima donnas cannot be tolerated anywhere along the complicated chain of exploration, involving as it does teams beginning with the initial idea, followed successively by the acquisition of the land, photogrammetry, ground geologcal survey, photo-interpretative work, geochemical and geophysical surveys, and climaxed by the final putting together of all scientific data by a coordinated team, all the members of which must contribute in a spirit of full cooperation if successful and rewarding results are to be obtained.

In private companies, government agencies, or in the consulting field, the best policy to follow is the golden rule. As applied to economic geologists, it might be well to mention specifically three commandments, the transgression of any one of which goes far towards lowering the standards of the profession both internally and externally. These are: thou shalt not gossip about thy colleague, thou shalt not belittle thy colleague, nor shalt thou underbid thy colleague. The first two admonitions need no amplification. In the case of the third, some explanation is in order. While it is conceded universally that it is unethical to underbid a professional competitor in an effort to get a job of routine consulting, it is quite in order to submit a proposal in response to a request for a large-scale operation, which proposal is on a recognized competitive basis. Also, consultants overseas in soft currency countries will perforce offer services at lower rates generally than those quoted from hard money areas.

In mentioning fees, they appear, for consulting geologists, to fall into three categories: First, are those cloistered in our ivory towers who do not depend on consulting as a livelihood. Their competence is unquestioned and they are essential both to the profession and the industry. However, their cost of doing business, so to speak, is negligible. They have few overhead charges, such as rent, permanent staff, and no non-productive time between jobs. In the second category are some of our finest contributors to the profession, namely, the single consultant, or the small partnership, men who are, one might say, self-employed. They may or may not have offices, but in any case their cost of doing business is relatively low compared to the

[1]DONALD M. DAVIDSON is Vice President and Chief Geologist of the E. J. Longyear Co., Minneapolis. Dr. Davidson received both his graduate and undergraduate training at the U. of Minnesota. He has had broad experience in economic geology and in 1954 was President of the Society of Economic Geologists. This article is a condensation of a paper presented before the SEG, Minneapolis, November 1956.

third class, namely, large firms or corporations who must maintain a permanent staff of experienced personnel in order to be able to meet the demands of industry and governments for group service by highly trained technicians and scientists. Experienced staff men come high. They must be paid an annual salary which is competitive with that in industry. Yet, the maximum amount of available working time for such an individual is about 260 days per annum. In addition must be considered the cost of various insurances, pensions, bonuses, as well as other perquisites, thus in sum and substance a consulting firm these days to be prudent must add from 80% to 150% of a technical man's salary for overhead—the cost of doing (or perhaps remaining in) business in order to make available teams of trained consultants for a vital demand.

Consultants in the first category may feel justified in charging a per diem fee of "X" dollars. Those in the second class may have to add "Y" dollars to take care of running expenses, while those in the third class are constrained to figure their fee at "X" plus "Y," plus "Z," the latter being the cost of doing business which may exceed "X" + "Y."

Contingent Interests

As for the ethics of contingent interests, in these days of high taxes we are forced to take a second look at a practice which was once not exactly condoned in these United States, although our friends north of the border have benefited abundantly along these lines over the years.

The potential flaw, which stems from a contingent reward, lies in the temptation to spend more of the principal's money on a questionable prospect than might otherwise be the case. The advantage lies in greater incentive and effort on the part of the explorer coupled with a larger gain if successful. The ethical answer should be an arrangement whereby the employed party forgoes part or all of his regular fee, thereby placing his interests more in parallel with his principals. Also, in cases of contingent interests all those concerned are entitled to a full disclose of the facts of the arrangement.

In the field of employer or client relationships, honesty and integrity with one's employer go without saying. Loyalty to the employer is also essential not only during the term of the contract but afterward as well. Perhaps it is even more important afterwards than it is during the term of the contract. A professional geologist must

continued on page 16

ONE HUNDRED for AGI

The Committee of One Hundred for AGI is destined to play a vital role in the future of the Institute. It is the goal of the Committee of One Hundred to provide a fixed, predictable income of $10,000 for the Institute over the next five critical years during which time the final consolidation of its financial structure is being carried out. Success in attaining this goal will mean that AGI will be in a much better position to discharge its duties in the fields of public education, and public, government and professional relations.

Persons enrolled on the Committee of One Hundred are pledged to contribute $100 or more per year in cash or investment securities for a period of five years. Dr. E. A. Eckhardt, Chairman of the AGI Finance Committee, reported on January 21 the following list of members of the Committee of One Hundred for AGI:

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L. Decker Dawson, Jr.
A. Rodger Denison
E. A. Eckhardt
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Cecil H. Green
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D. A. McGee
Arthur Montgomery
T. J. O'Donnell
Wallace E. Pratt
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Earle F. Taylor
J. W. Thomas
Theron Wasson

Every dollar contributed by members of the profession in support of the American Geological Institute will be matched—dollar for dollar—up to $20,000, by the National Science Foundation under the conditions of a recent grant to the AGI. The matching fund condition has been attached to the grant to stimulate the profession to awareness of the AGI's financial needs, and to encourage the profession to assume full financial sponsorship of the Institute. It is understood that no further requests for NSF funds will be made to meet general operating costs. If the full goal of the Committee of One Hundred for AGI is attained, one half of the NSF grant will be assured.

Individuals wishing to consider membership in the Committee of One Hundred may receive pledge forms by writing the American Geological Institute, 2101 Constitution Ave., N.W., Washington 25, D. C. Contributions to AGI are tax-deductible.

E. L. DeGolyer

a tribute to a passing leader

Everette Lee DeGolyer, one of the world's foremost geologists and father of applied geophysics, died at the age of 70 in Dallas on December 14, ending a half century of brilliant service to the industry and nation.

While attending the University of Oklahoma, he worked for the United States Geological Survey, and during his early career he worked for Mexican Eagle Oil Co., Ltd., where he staked the discovery well of the Tierra Amarilla field.

His first geological fame came when he staked the location for what proved to be one of the world's biggest oil-producing wells, the prolific Potrero del Llano No. 4, which came in gushing 110,000 bbls. of oil daily and ultimately produced more than 100,000,000 bbls.

In addition to introducing into the United States the torsion balance and the refraction and reflection seismic methods of exploration, he was well known for organizational work throughout the industry. Representative of the organizations he established are Amerada Petroleum Corp., Geophysical Research Corp., and Geophysical Service, Inc. Also, his suggestion resulted in the founding of Core Laboratories, Inc. In 1936, together with Lewis W. MacNaughton he formed an association which resulted in the world-famous oil-properties appraising concern, DeGolyer and MacNaughton. The most recent product of his organizational genius was the founding of Isotopes, Inc., in 1955.

The industry bestowed its most highly prized awards upon DeGolyer for his consistently outstanding service. Besides a host of honorary degrees and memberships, they include: The Texas Mid-Continent Oil and Gas Association's Distinguished Service Award in 1939, the Anthony F. Lucas Medal of the A.I.M.E., in 1941, the John Fritz Medal of the Founder Societies (A.S.C.E., A.I.M.E., A.S.M.E., and A.I.E.E.) in 1942, and the A.A.P.G.'s Sidney Powers Memorial Award in 1950.

At his death, DeGolyer was senior chairman of the board of DeGolyer and MacNaughton, and an active member of many other boards, including: Louisiana Land & Exploration Co., Republic Natural Gas Co., Southern Pacific Co., General Minerals, Christiana Oil Corp., and First National Bank in Dallas. Because of failing strength, he had recently resigned from the Boards of Dresser Industries, and Texas Eastern Transmission Corp.

As a result of a prevailing interest in public affairs, he added to vast accomplishments in his own field numerous outstanding endeavors as public servant and patriotic citizen, not only in Dallas but throughout the nation. Through his interest and support, the Saturday Review of Literature was rejuvenated. He was interested in the activities of the Smithsonian Institution of which he was a Regent.

Outstanding in his character was an instinctive ability to draw in his associates in the formation of an idea. The scientist-executive, amazingly adept in the field of human relations, was able through exceptionally clear thinking and a superb sense of timing, to clarify other men's thinking, enabling them to see immediately the same picture of an idea that his own mind visualized.

Eckhardt on World Trip

Dr. E. A. Eckhardt, a past-President of the American Geological Institute and chairman of the Institute's Finance Committee, sailed with Mrs. Eckhardt from New York on January 19 aboard the Caronia on a round-the-world cruise. During Dr. Eckhardt's absence, Dr. J. L. Gillson, AGI President, will serve as Deputy Chairman of the Finance Committee.

GEOCHEMICAL SOCIETY

becomes 14th AGI Member Society

Early in January, when the governing bodies of two-thirds of the Member Organizations of the A.G.I. had acted favorably on the application of the Geochemical Society, the latter became the newest member of the Institute. It is represented on the Board of Directors by Professor Ian Campbell, California Institute of Technology, Pasadena, California, and Dean E. F. Osborn, Pennsylvania State University, University Park, Pennsylvania.

The Geochemical Society was organized on November 7, 1955, during the annual meeting of the Geological Society of America in New Orleans. It subsequently became an Associated Society of the G.S.A. and is represented on the Division of Earth Sciences of the National Research Council by Dr. George Phair. At the New Orleans meeting the following officers were elected: President, Earl Ingerson; Vice-president, Julian R. Goldsmith; Secretary, John C. Maxwell; Treasurer, George T. Faust; Councilors, William T. Pecora, and George R. Tilton, 1956: J. W. Greig and William W. Rubey, 1956-1957; Willard F. Libby and Hatten S. Yoder, Jr., 1956-1958.

The objective of the Society, as stated in the constitution, is to "encourage the application of chemistry to the solution of geological and cosmological problems." No attempt has been made to establish a new journal of geochemistry, but the Council has recommended, with the concurrence of the publishers, that *Geochimica et Cosmochimica Acta* be adopted as the Society's official journal. This question is being voted on by the membership and the decision should be made before March 1.

Adoption of the journal will not mean that members must subscribe to it. Dues will be maintained at the original rate of $2 per year, but members may subscribe to *Geochimica et Cosmochimica Acta* at $10 per year regardless of the number of volumes printed per year and regardless of whether or not the journal is adopted as the Society's official publication. Subscriptions should be sent to Pergamon Press, 122 East 55th Street, New York 22, New York, or to Pergamon Press, Ltd., 4 and 5 Fitzroy Square, London, W. 1 England, together with an indication that the subscriber is a member of the Geochemical Society.

News of the Society and its members is circulated in mimeographed form under the title GEOCHEMICAL NEWS. Four issues have been circulated and two are in press, one of which will be a membership list as of January 1, 1957.

The Geochemical Society now has approximaely 1300 members all of whom have at least a bachelor's degree or the equivalent in a natural science and are interested in applying the knowledge and techniques of other sciences to the solution of problems of geology and related disciplines. Approximately 70% of the members consider themselves earth scientists and 20% chemists. The remaining 10% are physicists, oceanographers, ceramists, astronomers, biologists, and soil scientists.

The Society currently is making a survey of geochemical education, with a view toward coordination and at least partial standardization of curricula and introduction of sound training in geochemistry into more colleges and universities. It is also interested in fostering coordination of research in geochemistry and dissemination of knowledge relative thereto. A part of this program should be collection and distribution of standard samples of naturally occurring materials.

There is also strong interest in abstracts of geochemical literature. It is to be hoped that this can be a part of a broader project of geological abstracts, but if geochemistry is not covered in the near future in this manner *Geochimica Acta* and/or *Geochemical News* will endeavor to cover at least the more significant articles in geochemistry, especially those occurring in difficultly available journals. Recognition of geochemistry as an independent earth science correlative with geophysics, mineralogy, etc., is also a goal of the Society.

Individuals interested in furthering the objectives of the Society are urged to apply for membership. It should be emphasized that membership in the Society is international. Application blanks can be obtained from the president, c/o U. S. Geological Survey, Washington, secretary, Princeton University, or treasurer. Dues are $2 per year and should be sent to the treasurer, DR. GEORGE T. FAUST, U. S. GEOLOGICAL SURVEY, WASHINGTON 25, D. C.

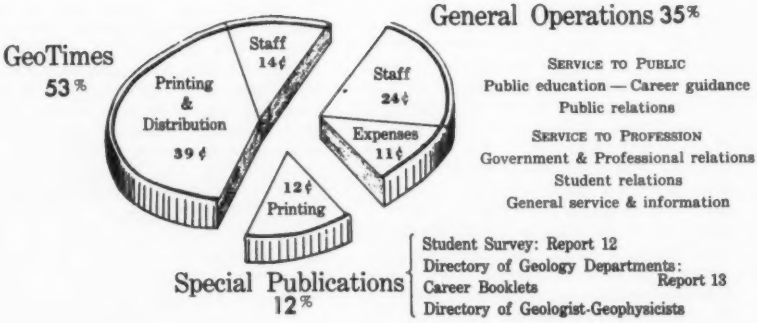
ERRATA. We misplaced an arrow on Data Sheet 3, GeoTimes, January 1957, p. 13. Please correct your copy as shown below.

underthrust

Some basic facts . . .

1. GeoTimes now goes to 18,000 geoscientists and within a year will reach more than 20,000.
2. GeoTimes goes to all members of the 14 Member Societies by decision of the societies represented on the AGI Board of Directors.
3. Member Societies are assuming the present staffing and operational cost of AGI, but cannot provide additional funds to defray GeoTimes costs without increases in dues or curtailing member services.
4. Advertising income cannot and should not be the sole means of support of GeoTimes.
5. Annual contributions of Industrial Associates of AGI must not be diverted from AGI plans of public education, career guidance, etc., to meet cost of GeoTimes and other operations maintained for the benefit of the profession.

The AGI dollar ***and where it will go .....***



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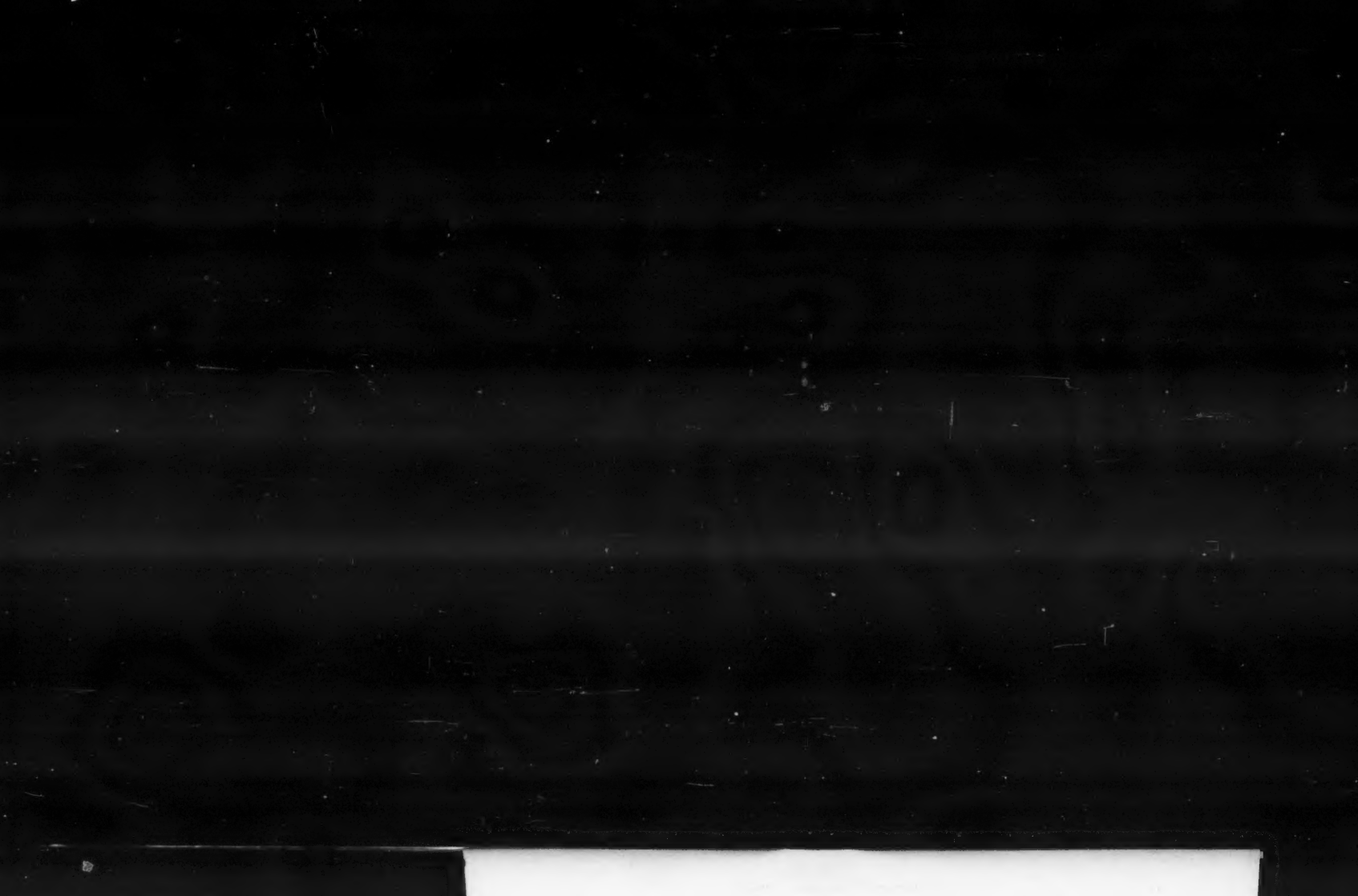

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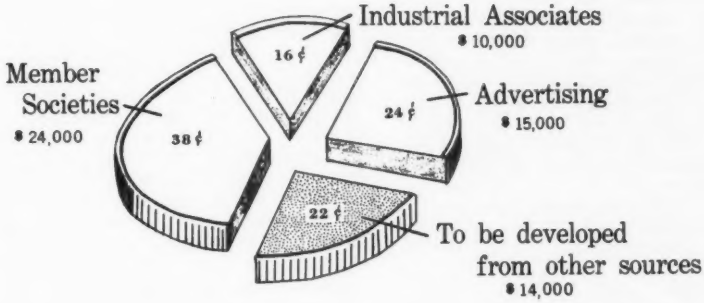

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*"George" is our little chap, GeoTimes, who is in up to his neck — carrying news to his brother rock knockers.

MANPOWER *in a column —*

By HOWARD A. MEYERHOFF
Scientific Manpower Commission

In a pamphlet entitled "Research by Cooperative Organizations," the National Science Foundation has extended its survey of scientific research to the activities of trade associations, professional and technical societies, agricultural cooperatives, and other organizations whose members are voluntarily engaged in research and other nonprofit activities of mutual interest. This study was conducted for the Foundation by staff members of Battelle Memorial Institute.

In a day and age when research and development expenditures are recorded in billions of dollars, the $21,152,200 spent by trade associations, professional and technical societies, and comparable cooperative groups may look like small change, yet the character of the work being done has a significance that is out of proportion to the amount expended. Among the organizations covered by the survey, for example, are such trade associations as the American Iron and Steel Institute, the American Petroleum Institute, Bituminous Coal Research, Inc., Portland Cement Association, and Structural Clay Products Institute. The professional and technical societies include the American Chemical Society, American Institute of Mining, Metallurgical and Petroleum Engineers, and American Medical Association.

It is evident from this random selection that organizations like these have a perspective on the research needs of their respective fields that would be difficult to match, hence the investigations they sponsor are likely to have especial importance. Approximately half the funds for research and development undertaken by these groups was spent in their own laboratories, in which nearly 700 scientists and engineers were employed. The remainder of the work was done on contract in university, commercial, and nonprofit laboratories.

The survey is marred by one blind spot, which was imposed upon the authors by the definition of research and development that was adopted. It was devised by the Harvard School of Business Administration, and from it was excluded all field research and exploration, which comprise the vital investigative functions of the earth sciences. It is unfortunate that no space was given to the field work sponsored by such important professional societies as the American Association of Petroleum Geologists and the Geological Society of America, which were in the business of making grants for field and laboratory research many years before the National Science Foundation was even so much as a gleam in a Congressman's eye. The omission means that no one can learn from the pamphlet how much is being done in the earth sciences.

Geology Teachers Institute at Illinois

The National Science Foundation has awarded a grant to the University of Illinois to establish the first Summer Institute in Geology for College Teachers.

The Institute will be directed by A. F. Hagner and D. M. Henderson of Illinois; R. M. Garrels of Harvard will be the third staff member. Staff and facilities of the University and of the Illinois State Geological Survey will be used.

The Institute is designed to meet a growing problem in geological education. Many of the recent advances in geology have been made by means of a modern mineralogic and geochemical approach. To teach these concepts requires an understanding of the principles of atomic structure, geochemistry, and nuclear geology The Institute aims to assist teachers to acquire this background.

The first 4 weeks will be devoted to development of the principles of crystallography, crystal and surface chemistry, geochemistry, and their application to petrology, mineral deposition, and sedimentary processes. X-ray diffraction, electron microscopic, DTA, and spectrographic techniques will be used. The use of statistics in geologic problems will be investigated.

The last 4 weeks will be devoted to lectures on recent contributions to geology by invited specialists, and to work by Institute members on problems.

The Institute will be held from June 17 to Aug. 10. Thirty college teachers of geology will be invited to attend. Each will receive a stipend of $600 plus $120 for each dependent up to a total of four, and an allowance for travel.

Circulars and application blanks are being sent to geology departments throughout the country. Inquiries should be sent to D. M. Henderson or A. F. Hagner, Geology Dept., University of Illinois. Applications should be filed by April 1.

OCTOBER 1957

Geology for BSA

Geologists should be setting their sights now for the target date, October 1957, which is the Geology Month for the Boy Scouts of America. As related in the January GEOTIMES, the geologists of the country will have an unparalleled opportunity to work (in scouting) with boys and men through the cooperative efforts of the Boy Scouts of America and the combined AAPG-AGI Scouting committees.

Already, many geologists are known to be active in scouting as scoutmasters, troop-committeemen and in other capacities in scout troops throughout the country. In October 1957, however, we hope to have an effective liaison set up between professional geologists throughout the country and the more than 500 Boy Scout Councils.

You can get on the band wagon by volunteering to contact the Scout Executive at the head of your local Council and work with him to develop the local program for October. A kit, available for distribution by May, will provide much of the background data.

Volunteers should write the AGI so that you will be on the mailing list to receive data that will be sent out and so that the Council with which you are working is known to us. The aid of local geological societies, state surveys, departments of geology and other interested groups will be sought to obtain complete coverage for all of the Councils.

The job is big—planning should start early—so you are urged to establish the contact with the scout executive as soon as possible. Chalmer Cooper of the U. S. Geological Survey is still open to suggestions for project, crafts, and activities suggestions.

GEOLOGY in the Public Eye

by Bob Bates

"Scenic Trips to the Geologic Past" is the title under which the New Mexico Bureau of Mines and Mineral Resources is issuing a series of guide-books for the layman. Two have been published. No. 1, by Brewster Baldwin and Frank Kottlowski, contains road logs for four short trips in the vicinity of Santa Fe. Each is preceded by an informal discussion of the geologic and scenic features to be seen. Photos, cross sections, and maps are used. No. 2, by John Schilling, covers a 96-mile round trip from Taos into the Sangre de Cristo Mountains via Red River and Eagle Nest. The log, which is copiously illustrated, is preceded by a historical account of the region.

Bulletin 36 of the New Mexico Bureau of Mines, by John E. Allen and the late Robert Balk, is entitled "Mineral Resources of Fort Defiance and Tohatchi Quadrangles, Arizona and New Mexico." Four features distinguish it from the run of such reports: (1) a five-page nontechnical summary; (2) a list of vegetation, by life zones, on the Navajo Indian Reservation (by Don W. Clark); (3) a glossary of technical terms; and (4) a list of Navajo words for technical terms. None of these adds much bulk to the report, but each enhances its value and interest to all users, both professional and casual. Why not a nontechnical summary and a glossary of trick terms in *every* geological report?

High-school students of Washington, D. C., had an opportunity last December 1 to hear several fields of geology discussed, and to form their own opinions of the five eminent geologists who addressed them. These were Steve Stephenson (economic), Wendell Woodring (paleo), Douglas Ball (petroleum), Michael Fleischer (geochemistry), and J. R. Balsley (geophysics). Such a glittering array of talent must have made converts by the dozen.

Trivia geologica: Boxes of Wheaties now contain mineral specimens. For two box tops and 25 cents, interested persons can obtain a "rare mineral collection." If you already have a rare mineral collection, it is reported that the specimens are of a size suitable for swallowing along with the Wheaties.

ASP - ASCM

Washington, March 3-9

The American Society of Photogrammetry and the American Congress on Surveying and Mapping join for the annual meetings at the Shoreham Hotel, Washington, D. C., March 3-9. As usual the program will have great interest for the earth scientists because of their fundamental interests in maps. The photogrammetrists will discuss developments in photogrammetric methods and equipment. They have organized a Photointerpretation Symposium which will include a paper on the use of color photography in geologic studies, by B. H. Kent, U.S.G.S. Also planned is a panel on photogrammetry in the federal highway program which contains a paper on use of photogeology in highway engineering. This paper will be by J. H. McLerran, U.S.C.E.

The ASCM portion of the program will cover new equipment and methods, cartographic problems. Geological and geophysical personnel concerned with control surveys will find interesting information presented on the Tellurometer, a new device for measuring distances by wavelengths, developed recently in South Africa. As usual, the meeting will feature commercial exhibits. Persons interested in receiving the advance program for the APS-ACSM may write the American Geological Institute.

Information Conference

The School of Library Science of Western Reserve University will sponsor, in connection with its Center for Documentation and Communication Research, a conference in Cleveland, Ohio, April 15-17, 1957. The purpose of this conference will be to demonstrate systems in use for organization, storage and retrieval of recorded information. A symposium on information-handling problems and techniques will also be included.

A model information center, operated on the Western Reserve campus during the conference, will seek answers from cooperating information centers across the nation and abroad to questions asked in Cleveland.

At least one major oil company and a number of industrial firms are participating in the conference as well as many libraries, universities, government agencies and other organizations. Further data may be obtained by writing Jesse H. Shera, Dean, School of Library Science, Western Reserve University, Cleveland 6, Ohio.

Second Nuclear Congress

The American Geological Institute is again serving to coordinate program activities for member societies in connection with the Second Nuclear Congress which will be held in Convention Hall, Philadelphia, March 11-15, under sponsorship of the Engineers Joint Council. Listed below are members of the AGI committee on program for this meeting:

W. R. Thurston, *Chairman*

John G. Broughton — Paul F. Kerr
Clifford Frondel — J. Laurence Kulp
Jack B. Graham — Phillip L. Merritt
Lewis G. Weeks

More than 150 papers will be presented in 32 technical sessions. Geological scientists and engineers will be interested in papers on waste disposal and protection of water supplies as well as the two sessions on natural resources scheduled for Thursday, March 14, as listed below:

THURSDAY MORNING, MARCH 14

Exploration, Resources and Production of Uranium, Robert D. Nininger, U. S. Atomic Energy Commission.

Recent Advances in the Geology of Uranium Developments in Geochemistry and Mineralogy, Robert M. Garrels, Harvard Uni.

Laboratory Investigations on the Origin of Uranium and Vanadium in the Ores of the Colorado Plateau, Alfred M. Pommer, U. S. Geological Survey.

Crystal Chemistry of Carnotite, P. B. Barton, D. E. Appleman, U. S. Geological Survey.

New Developments in Methods of Radiometric Assay for Uranium, Herbert L. Volchok, Isotopes Inc.

THURSDAY AFTERNOON

Patterns of Disequilibrium in Radioactive Ores, John H. Rosholt, U. S. Geological Survey.

Zirconium: Mineralogy and Geochemistry, Clifford Frondel, Harvard University.

Environment of Some Wyoming Uranium Deposits, Eugene W. Grutt, Jr., U. S. Atomic Energy Commission.

Uranium West of the Colorado Plateau, D. L. David and B. J. Sharp, U. S. Atomic Energy Division.

Recent Uranium Redistribution in the Cameron, Arizona Deposits, Ralph Austin, U. S. Atomic Energy Commission.

Natural Occurrence of Thorium, Geo. Phair, U. S. Geological Survey.

The Advanced Program will be available by writing to the American Geological Institute shortly after February 1. It will contain complete information on registration and hotel reservations.

"Mining for Nickel" is the title of a movie available for use by clubs, schools and scientific groups, available on request from **International Nickel Co., Dept. 248 e, New York 5, N. Y.**

DEAR EDITOR:

During the past several years I have read with great interest the opinions of teaching and non-teaching people as to what should or should not be included in a basic four-year geology curriculum. Some want to include more "humanities"; others demand more mathematics, physics, chemistry, and related sciences. Arguments may be presented in favor of both sides, and I agree that such pro and con discussions represent a healthy situation; but at the same time I become somewhat concerned when these people fail to present a specific, tangible course program keeping in mind the problems of (a) maintaining well-rounded, adequately trained, and dedicated instructors, (b) student and faculty facilities, (c) reasonable teaching and research load, (d) integrating a graduate school program, and (e) keeping within the limits of the school objectives and philosophies.

Let's go to a five-year program and then everyone will be satisfied.

Sincerely,
L. W. LEROY, Head
Department of Geology
Colorado School of Mines

DEAR EDITOR:

Somebody goofed. A well-meaning publicist tells us on page 11 of the December GEOTIMES that F. V. Hayden was Director of the U. S. Geological Survey. The "Hayden Survey" (Geological and Geographical Survey of the Territories) antedated the U. S. Geologic Survey by twelve years. In stratigraphic succession the Directors of the U.S.G.S. were: King, Powell, Walcott, Smith, Mendenhall and Wrather. Every geologist and student knows this, of course, and we must conclude that the writer of the paragraph about Professor Moore is not a geologist.

Sincerely yours,
KURT SERVOS

Editor: We surely could use an editorial watchdog.

DEAR EDITOR:

Re "Moore Receives Hayden Award," p. 11, GEOTIMES, Dec. 1956, which says: "Dr. Raymond C. Moore, President-elect of the Geological Society of America." I am a fellow of the GSA and have not received, as yet, a ballot for 1957 election of the officers of the Society. In the previous election R. C. Moore was elected Vice-President of the GSA.

Very truly yours,
M. K. ELIAS

Editor: Our error is rather presumptuous.

DEAR EDITOR:

Petroleum geology is denitely limited because obviously there is just so much work to be done.

Memberships in American Association of Petroleum Geologists have increased over five thousand since 1950, and if this rate of increase continues then no doubt there will come an unhappy time when many petroleum geologists will be unemployed. In that event Geological colleges and associations would be squarely to blame for such a shabby situation.

It appears that the profession of petroleum geology has gone to one extreme and the medical profession has gone to the other extreme in this matter of memberships.

This is the exact opposite to what the situation should be because oil geology is a limited field and medicine with population increases is therefore, a more or less unlimited profession and field.

A survey to determine the oil industry's need for petroleum geologists is highly in order.

Yours very truly,
W. L. GRAHAM

Student Exhibit Contest planned for AAPG-SEPM meeting

Recognized geology student organizations affiliated with colleges and universities throughout the country are eligible to compete in a contest for the best display depicting some phase of the geology of petroleum. The contest will be held in conjunction with the annual meetings of the AAPG-SEPM, Kiel Auditorium, St. Louis, April 1-4, and is sponsored by the Educational Exhibits Committee. A $50 first prize will be awarded and additional awards will be made should the number of entries be greater than 10. For further information write DANIEL F. MERRIAM, CHAIRMAN, EDUCATIONAL EXHIBITS COMMITTEE, c/o State Geological Survey, Lawrence, Kansas.

ETHICS *continued from page 7*

consider that the work he does for a client or an employer belongs to the employer. The geologist, then, is a trustee in the matter of the knowledge which he has gained for the person who hired him. He has no right to divulge this knowledge either during the course of his employment or later without the consent of those who employed him during the time of his investigation. Even new ideas which he may develop about the district in which he is working do not belong to the geologist, but rather to the person by whom he is employed. It is unethical, then, to hold back on an idea until one has ceased employment for a particular client or employer in order to bring this idea forth later for one's own profit.

Loyalty to a client, in fact, goes all the way except where dishonesty enters into the picture. No professional geologist is required to lower either his standards of ethics, or his own personal moral code, in order to satisfy the dishonest demands of an employer or a client.

Responsibility to Public

With regard to the public, it may well be said that these days the public not only deserves, but it expects, service. As herein defined, service means honest, useful conduct to others. The days are over when an economic geologist fulfills his obligations merely by adding his name to a report which merely gives a description of the geology along with a non-committal portion on the economic possibilities. The economic geologist now has the same position of stewardship which Herbert Hoover, in 1909, ascribed only to the mining engineer. His duty now transcends not only the factual reporting on quantity and quality of ore, known and potential, but he is obliged often, in the public interest, to state his appraisal of the economics of the enterprise under consideration.

Nowhere has this more implication than during the excessive uranium boom which fortunately terminated about the time of the Geneva Conference, giving place to a more sound climate for appraisal. The shenanigans which transpired in the early boom days were unfortunately not confined to the non-professional element, whereas the public, as well as the legitimate investment concerns had unprecedented need of sound advice and mature counsel. Notwithstanding, and despite the yeoman service done by a handful of honest professional stalwarts, to paraphrase a great Englishman, it may be fairly stated that never in the history of our profession have so many, clients and public, been so shabbily treated by so few self-styled uranium experts. The early history of the plateau boom constitutes, on the whole, a rather sorry chapter in our professional annals.

Advertising

Considering the complexity of modern-day exploration, involving as it does heavy investment in equipment in the case of photogrammetry, aerial geophysical work and photogeology, it much be conceded that dignified advertising in these enterprises is consistent with good taste. It is, in fact, an essential of the free enterprise system for it stimulates honest competition with a resulting increase in efficiency.

Perhaps the dictates of good taste would limit advertising to those who have large investments in equipment as against those who furnish purely professional services. In the latter cases, the usual card in professional publications should suffice. Certainly in these days of prosperity, most professional men have more work than they can handle. Our problems are not those of advertising.

Any attempt to spell out in detail a written code of ethics and conduct for an economic geologist would prove burdensome, indeed, and its effectiveness would be questionable. Put in simplest terms, each one of us should evolve a code for his own personal ethics and conduct. Having once set up a credo which is above reproach, then we can do no better than to follow the admonition of Polonius — "above all, to thine own self be true and it must follow as the night the day, thou canst not then be false to any man."

Kansas Plans Geophysics Symposium

A "Symposium on Geophysics in Kansas" is being planned by the Kansas Geological Survey as an activity of the International Geophysical Year. Papers relevant to theoretical and/or exploration geophysical studies in Kansas are to be solicited for publication in this symposium volume.

William W. Hambleton, Assistant Director of the Kansas Survey, who will edit the volume, requests that authors of appropriate papers write to him signifying their interests. If sufficient papers can be assembled by June 1, 1957, the symposium volume will be published by late 1957 or early 1958.

SCIENCE AND ENGINEERING IN AMERICAN INDUSTRY, Final Report on a 1953-1954 Survey, National Science Studies NSF 56-16, prepared by the Bureau of Labor Statistics for the National Science Foundation, 1956.

This report by the NSF reports on research and development costs and personnel, and discusses factors affecting company expenditures for research and development. Geological and geophysical field exploration were excluded from R & D in this report with the consequence that it shows only 7% of earth scientists engaged in research and development in industry. The AGI and SMC were instrumental in urging that this fact be appropriately documented throughout this final report, so that it is much more acceptable to the geological sciences than was the preliminary version that aroused the ire of so many geologists. The SMC and AGI have recommended that a study of research and development in exploration for mineral resources be undertaken parallel to the survey presented in this report.

AN INDEX OF MICHIGAN GEOLOGY, 1823-1955, by Helen M. Martin and Muriel Tara Straight, pp. 461, 1956, Publication 50, Geological Survey Division, Michigan Department of Conversation, Lansing, Michigan.

A comprehensive guide to geologic and mineral resource information on Michigan, this report lists known literature on the geology, including geologic maps; an index to stratigraphic nomenclature, summarized in an accompanying chart; and reported exposures of Paleozoic rocks. Also included are acts of the state legislature relating to the geological survey and a summary of topographic mapping activities.

THINGS MAPS DON'T TELL US, by A. K. Lobeck, 159 pp., 1956. The MacMillan Co., 60 Fifth Ave., New York 11, N. Y., $4.95.

Geoscientists and laymen alike are sure to be intrigued by this book in which the author presents a series of 72 map interpretation quizzes. Using his wealth of geomorphological knowledge and his widely recognized talents as an illustrator, he poses problems as to the "why" of certain map patterns and then explains why. This book can be recommended for the interested layman and the inquiring youth to whet their appetites for more geological knowledge.

KANSAS OIL & GAS POOLS, compiled by Research Committee, KGS, Albert E. Lukken, Chairman, 1956, Kansas Geological Society, 508 E. Murdock St., Wichita, Kansas, $4.00.

First of a series by the KGS, includes detailed information on 26 oil and gas pools of south-central Kansas.

ENGINEERING AS A CAREER, by Ralph J. Smith, 365 pp., 1956, McGraw-Hill Book Co., 330 West 42nd Street, New York 36, N. Y., $4.75.

A book written principally for use in a college orientation course, this text provides an excellent insight into the various career opportunities in the engineering fields. The book is written not only to describe the various engineering fields and to provide a preview of the application of engineering knowledge in these fields, but to discuss the elements of engineering philosophy and training. Discussed only briefly are careers in the mineral industries, as are the roles of the earth scientists. This book will be helpful in attracting young talent to the engineering fields.

Mexican IGC Publications

Persons have posed many questions about the publications of the XXth International Geological Congress. To those who are impatient over not having received the publications to which they are entitled, we urge patience. To those attending the Congress nearly 100 tons of pre-Congress publications are being mailed as rapidly as they can be handled. Non-attending members will be next in line to receive their publications—another 100 tons of paper. Orders for the pre-Congress publications will be filled immediately and the AGI will supply a list of publications and ordering instructions upon request.

The post-Congress publications will be published over the next 2-3 years and will be distributed as they become available. Prices of these will be announced. These will include the General Memoir, symposia on the Cretaceous, on geochemistry and possibly a third volume on the Cambrian. The papers presented at the Congress will also be published.

The task of printing the contributions to an International Geological Congress in the six official languages is indeed formidable. The publications of the XVIII Congress (London) took three years and the XIX Congress (Algiers) four years.

A Survey of
Geology-Geophysics Students in 1955-56
and of
Available Scholarships, Fellowships, Assistantships, Etc.

AGI REPORT 12

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ROCK CHIPS

by SANDSTONE SAM

Many a man's wallet would be flatter if it weren't so full of credit cards and society membership cards.

* * *

"Diatoms form salicious shells and live in the oceans and fresh water" from the mouth of a baby geologist.

* * *

SsS still smiles as he reminisces about the blue-eyed and shapely campus queen of college days-gone-by, who earned the name Molly Bendite through a very logical slip of her tongue.

* * *

Hydraulicking: Metamorphism caused by water pressure, as at the bottom of the ocean.

* * *

The Washington Post, 12/23/56, in reporting on the reopening of the Consolidated Virginia Mining Co.'s mine on the Comstock Lode, says "geologists believe it (Comstock) was formed perhaps 60 million years ago by the upwelling of subterranean fire and steam."

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POSITIONS WANTED

BOX 242. GEOLOGIST, 35, B.S., married, 5 years' major oil company experience in northern New Mexico and West Texas, including administrative, seismic and some surface work. Desires to relocate. Excellent references.

BOX 248. Exploration Geologist, oil and mineral, surface and subsurface, degrees: P.E. & M.P.E., Colorado Mines, wishes to associate with investment or exploration group, 20 years domestic and Western Hemisphere experience in oil exploitation, and mineral examination. Working knowledge Spanish and Portuguese. Aerial photo and weather modification experience (make or suppress rain).

BOX 254. GEOLOGIST, Ph.D, specialist in Economic Geology, Petrology, Mineralogy, presently Visiting Professor, wants similar position for the academic year 1957-58, or permanent affiliation with a serious institution of learning. Experienced in teaching, widely travelled, familiar with geologic literature and supporting sciences. Will also consider research or exploration. Excellent references. Available June 1957.

BOX 256. Invertebrate fossil preparator desires curatorial or field position. 10 years field experience, knowledge of stratigraphy and taxonomy, and capable of lecturing in paleontology as well as collect and prepare study and exhibit material. Has collected in all classic American and foreign localities and is free to spend summers in field work. Publications in paleoecology, etc. Salary secondary.

BOX 259. Geologist-Geophysicist, Sc.D. 12 years experience in research, teaching and supervisory work in domestic and foreign operations in the fields of petroleum and mining, geophysics, geology and oceanography. Desires position with progressive company in southern or western U. S. having foreign operations or research institute. Available May.

BOX 260. Ambitious geologist, 21, B.A., desires employment in the hard rock line. Well versed in petrology, mineralogy, research and analytical technique. Will go anywhere to do anything! Available in June.

BOX 261. Exploration Geologist, 33, married, B.S. in Geology. Experienced in geological reconnaissance, examination-evaluation of mines and prospects, and geochemical prospecting. Have strong interest in mining geophysics. Desire connection with chemical or mining industry as resident or consultant in raw materials exploration and development. Prefer location West Coast or Southeast U. S.

BOX 262. Geologist, 37, B.A., married, 11 years commercial experience coal, iron ore, quarries. Includes mapping, production, engineering, evaluation, and cost analysis. Desire to relocate. Will consider teaching post.

BOX 263. Paleontologist-stratigrapher, invertebrate and micropaleontology. 42, married, Ph.D., 16 years experience teaching, research, and with U. S. Government. Field experience throughout North America and western Europe. Over 40 publications. Phi Beta Kappa; Fellow, G.S.A.; A.A.P.G.; S.E.P.M.; G.S. London; G.S. France, etc. Desires teaching position in University with graduate program, or research with State Survey.

BOX 264. Economic Geologist, 38, Ph.D., married. Desires position with consulting or progressive mineral exploration organization. 11 years of private company and Government experience in mining geology, exploration, property evaluation, mineral economics in Appalachian and Rocky Mt. areas involving uranium and base metals.

BOX 265. Geologist, Ph.D., veteran, 10 years diversified exploration, evaluation, investment experience. Currently engaged as professor in leading Geology Department. Desire to associate with domestic or international exploration, consulting or investment group.

BOX 266. Geologist, 29, A.B. plus 1 year post grad. Chemistry minor. Experience in Cartography, Geophysics and Electrochemical engineering. At present head high school science department. Desires permanent position with industrial or oil company. Available in June.

BOX 267. Geologist-Geophysicist, 44, married, D.Phil. Geology. 8 years consulting, 7 years teaching, 3 years military geology, 1 year expedition. Extensive knowledge Latin America, Europe, Middle East. Fluent Spanish, Portuguese, French, German. At present Head of Dept. Desire teaching position or with consulting-investment-exploration group. Specialties Petrology, Structure, Economic and Engineering Geology, Photogeology, Gravity, Magnetic, Electrical.

BOX 268. SUBMARINE GEOLOGIST, 27, married. Ph.D. from Scripps Inst. Oceanography expected June. Scientific leader 4 Scripps expeditions 1953-57: studies of sea floor and igneous geology of islands. Publications on marine volcanism and underwater volcanic acoustics. Desires research or teaching position in marine geology USA or abroad. Available after April.

BOX 269. Economic Geologist, 38, desires work in metropolitan New York. 3 years graduate work in geology and chemistry and 12 years professional experience with the government and a consulting firm in writing, research, evaluation and economic studies on metalliferous deposits. Proven ability to administer and organize work.

VACANCIES

TRINITY COLLEGE will need a permanent Instructor in geology, beginning Sept., 1957, to teach structural geology, geology of North America, introductory geology, and two other one-term courses. Ph.D. degree requirements must be completed or nearly completed. Salary dependent upon qualifications. Ample time and fine location for research in structural and glacial geology. Summers may be spent as desired. Write: Chairman, Dept. of Geology, Trinity College, Hartford, Conn.

MONTANA STATE UNIVERSITY, Missoula, Montana, Ph.D. to teach optical mineralogy, petrography, also general geology and some field methods, September 1957. Write Chairman, Dept. of Geology.

WANTED: Experienced field geologists and Tertiary Paleontologists for work in Panama. Knowledge of Spanish desirable. State full qualifications and expected salary. Replies confidential. Contact Edward A. Koester, 604 Orpheum Building, Wichita 2, Kansas.

GEOPHYSICIST for September 1957 to teach courses in theoretical and applied geophysics. Ph.D. required. Salary and rank commensurate with experience. Research encouraged. Write J. L. Rosenholtz, Dept. of Geology, Rensselaer Polytechnic Institute, Troy, New York.

MANAGEMENT POSITION AVAILABLE

Geophysical contractor desires man with wide acquaintanceship in geophysical industry and with heavy administrative ability. This is a top management position with commensurate compensation. Mail letter inquiry with full personal background.

BOX B11

American Geological Institute
2101 Constitution Avenue
Washington 25, D. C.

VACANCIES—*Continued*

UNIVERSITY OF WESTERN ONTARIO, London, Ontario will require, beginning with the 1957-58 session, a staff assistant in the field of mineralogy. Appointee must have a Ph.D. in this field and be prepared to foster, teach in and carry out research in mineralogy. Rank and salary dependent on qualifications. If interested submit resume personal data, experience references, etc. to Head, Dept. of Geology, University of Western Ontario, London, Canada.

RESEARCH COUNCIL OF ALBERTA requires a geophysicist (or physicist) and 4 geologists for groundwater studies (B.A., B.Sc.). Initial salary $4,400.00-$5,000.00 per annum. Council also requires a sedimentationist or stratigrapher (M.Sc. or Ph.D.) to do research on the Alberta Tar Sands and a geologist (Ph.D.) to join Council's petroleum geochemistry section. The salaries for these two positions are dependent upon experience but in the scale $6,000.00-$7,000.00 per annum. Transcripts of academic records, names of 3 referees, record of experience and a recent photograph should be sent to: The Secretary, Research Council of Alberta, 87th Avenue & 114th Street, EDMONTON, Alberta, Canada.

UNIVERSITY OF NORTH CAROLINA, CHAPEL HILL, Opening Sept. 1957, young man in igneous and metamorphic petrology or micropaleontology. Ph.D. required. Salary $5500. Write: Chairman, Department of Geology.

NEWARK COLLEGE OF RUTGERS UNIVERSITY, Newark 2, N. J. Instructor for Paleontology, Stratigraphy-Sedimentation, General Geology. Starting September 1957. Ph.D. Salary $4500 to $5000 depending on experience, on nine month basis. Write S. L. Agron, Chm., Geol. Dept.

MINERALOGIST OR GEOCHEMIST. The Tonawanda, New York, Laboratories of Linde Air Products Company is in need of a Mineralogist or Geochemist to work in the Molecular Sieve Research program and perform studies in connection with the application of Linde jet piercing to mining operations. Work would involve research on the synthesis of zeolites and other minerals with possible economic value. Ph.D. required with a background in physical and inorganic chemistry, hydrothermal synthesis and mineral economics desired. Send resume to Mr. R. P. Kalle, Linde Air Products Co., a division of Union Carbide and Carbon Corporation, P. O. Box 44, Tonawanda, New York.

SAINT LOUIS UNIVERSITY, St. Louis, Missouri. Engineering or Economic Geologist. September 1957. Salary depending on qualifications. Apply: Director, Department of Geology and Geological Engineering.

HAMILTON COLLEGE, Hamilton, Ontario. A staff-position will be available commencing July or September 1957 for a Curator of Geology. Applicant should have Ph.D. or equivalent with specialized training in paleontology. Duties include classification and organization of university collections of fossils, rocks and minerals, with an additional light teaching load and responsibility to carry out research work. The appointment will probably be initially at the rank of Lecturer or Assistant Professor but will depend on qualifications. Enquiries to the Chairman, Dept. of Geology.

Box 77. SEISMOGRAPH FIELD SUPERVISOR wanted by French geophysical corporation expanding its operations mostly in Europe and Africa. Thorough experience in all phases of seismic field techniques needed, with 8-10 years' field practice if possible. Preferably age 30-36. Furnish resume of education and experience.

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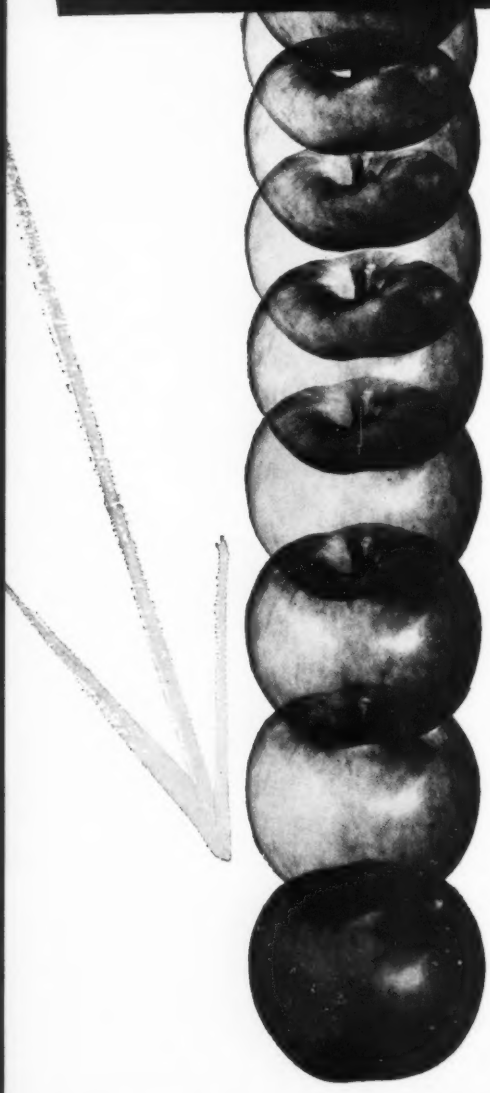

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